

LIST OF CURRENT CLAIMS

Claims 1-31 (Canceled)

32. (New) An apparatus comprising a rotating tool that is monolithic with a shaft and a fluid film bearing system wherein the fluid film bearing system comprises two thrust bearings at both coaxial surfaces of the blade and further comprising two journal bearings positioned at the shaft.

33. (New) The apparatus of claim 32, designed for balanced high-speed rotation.

34. (New) The apparatus of claim 33, wherein said rotating tool is a disc.

35. (New) The apparatus of claim 33, wherein said rotating tool is a rotor.

36. (New) The apparatus of claim 33, wherein said rotating tool is a cutter.

37. (New) The apparatus of claim 33, wherein said rotating tool is a drum.

38. (New) The apparatus of claim 33, wherein said rotating tool comprises magnets.

39. (New) The apparatus of claim 33, wherein said rotating tool comprises an illumination source.

40. (New) The apparatus of claim 33, wherein said rotating tool comprises sensor for high speed detection or high speed imaging.

41. (New) The apparatus of claim 32, wherein said apparatus is an high-speed cutting tool.

42. (New) The apparatus of claim 32, wherein said apparatus is a high-speed imaging tool.

43. (New) The apparatus of claim 32, characterised in that during rotation better process stability is achieved than with conventional machinery.
44. (New) The apparatus of claim 32, characterised in that during rotation better precision and process reliability is achieved than with conventional machinery.
45. (New) The apparatus of claim 32, characterised in that said apparatus is driven by a motor mounted on a different axis.
46. (New) The apparatus of claim 32, characterised in that said apparatus is driven by a motor mounted on the same axis.
47. (New) The apparatus of claim 32, characterised in that said apparatus is driven by an electric motor.
48. (New) The apparatus of claim 32, characterised in that said apparatus is driven by a turbine.
49. (New) The apparatus of claim 32, wherein the bearings combine both bearing and motor function.
50. (New) The apparatus of claim 32, wherein said rotating tool rotates at at least 10,000 rpm.
51. (New) The apparatus of claim 50, wherein said rotating tool rotates at 20,000 to 100,000 rpm.
52. (New) The apparatus of claim 50, wherein said rotating tool rotates at 40,000 to 100,000 rpm.

53. (New) The apparatus of claim 32, wherein the rotating tool rotates at a surface speed of above 1 km/min.

54. (New) The apparatus of claim 53, wherein the rotating tool rotates at a surface speed of above 10 km/min.

55. (New) The apparatus of claim 53, wherein the rotating tool rotates at a surface speed of 10 km/min to 30 km/min.

56. (New) The use of the apparatus of claim 41 for high-speed cutting.

57. (New) The use of the apparatus of claim 42 for high-speed photography.

58. (New) A high precision and high speed rotation device, comprising 1) a fluid (gas or liquid) bearing system which is a combined journal bearing and thrust bearing and 2) a blade which is monolithic with a shaft, wherein the thrust bearings use the sides of the blade as a thrust bearing surface and the journal bearings use the shaft as journal bearing surface and wherein the blade is positioned between the two thrust bearings.

59. (New) A fluid bearing system for stabilising high speed rotation, characterised in that said bearing system is a combined journal and thrust bearing system, that the thrust bearing uses the sides of the rotating tool as a bearing surface, that the rotating tool is positioned between two bearings and that the rotating tool is monolithic with the shaft.

60. (New) The fluid bearing system of claim 59, used with a combination of self-acting and externally fed fluid film bearings.

61. (New) The fluid bearing system of claim 59, used with magnetic bearings.

62. (New) The fluid bearing system of claim 59, used with rolling element bearings.

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63. (New) The fluid bearing system of claim 59, wherein the bearings combine both bearing and motor function.